

WHAT IS CLAIMED IS:

1. A method of identifying at least one polymer for binding with a receptor comprising the steps
5 of:

a) on a substrate, said substrate comprising polymers immobilized on a surface of said substrate, said polymers comprising a photoremovable protective group, irradiating a first region of said substrate without
10 irradiating a second region of said substrate to remove said protecting group from said polymers in said first region; and

b) contacting said substrate with a first monomer to couple said monomer to said polymer in
15 said first region, forming a first polymer on said substrate in said first region that is different from said polymer in said second region.

2. The method as recited in claim 1 wherein
20 said step of irradiating is a step of masking a light source with a mask, said mask comprising first transparent regions and second opaque regions, said transparent regions transmitting light from said source to said first regions, and said opaque regions blocking
25 light from said source to said second regions.

3. The method as recited in claim 1 wherein
said first and second regions each have total areas less than about 1 cm₂.

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4. The method as recited in claim 1 wherein
said steps of irradiating are conducted with a monochromatic light.

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5. The method as recited in claim 1 wherein
said step of irradiating a first region is a step of masking a light source with a mask located in a first

position, and wherein said step of irradiating a second region is a step of masking a light source with said mask located in a second position.

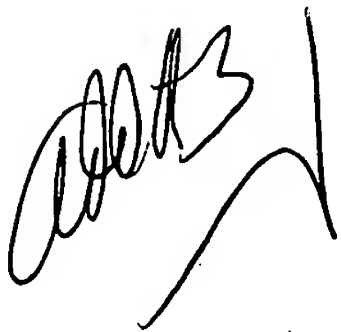
5 6. The method as recited in claim 1 wherein the step of irradiating further comprises the steps of:

10 a) placing a mask adjacent to said substrate, said mask having substantially transparent regions and substantially opaque regions at a wavelength of light; and

 b) illuminating said mask with a light source, said light source producing at least said wavelength of light.

15 7. The method as recited in claim 1 wherein said steps of irradiating are repeated so as to synthesize 10^3 different polymers on said substrate.

10044716-134401



VERY LARGE SCALE IMMOBILIZED POLYMER SYNTHESIS

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ABSTRACT OF THE DISCLOSURE

A synthetic strategy for the creation of large scale chemical diversity. Solid-phase chemistry, photolabile protecting groups, and photolithography are used to achieve light-directed spatially-addressable parallel chemical synthesis. Binary masking techniques are utilized in one embodiment. A reactor system, photoremovable protecting groups, and improved data collection and handling techniques are also disclosed. A technique for screening linker molecules is also provided.

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